

N<sup>o</sup> 5167



A.D. 1898

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PROVISIONAL SPECIFICATION.

**Improvements in Crushing or Kneading and Mixing Apparatus  
for Soap and other like Material.**

A communication by ANATOLE DES CRESSONNIÈRES and ERNEST DES CRESSONNIÈRES,  
both of 82, Chaussée de Gand, Brussels, in the Kingdom of Belgium, Soap  
Makers.

I, WILLIAM PHILLIPS THOMPSON, F.C.S., M.I.M.E., of the Agency for Foreign  
Patent Solicitors, 6, Lord Street, Liverpool, and 6, Bank Street, Manchester, both  
in the County of Lancaster, 118, New Street, Birmingham, in the County of  
Warwick, and 322, High Holborn, in the County of Middlesex, Civil Engineer, do  
5 hereby declare the nature of this invention to be as follows:—

The crushing or kneading and mixing apparatus which forms the object of the  
present invention is designed to subject the soap to an alternate crushing and  
mixing treatment in shavings instead of subjecting it to simple crushing by  
means of three cylinders, thus enabling an absolute homogeneousness of the paste  
10 to be obtained as regards its composition, and allowing of its being mixed with  
colour, whilst preventing waste of soap.

The alternate action of crushing and mixing is obtained by the arrangement  
of crushers in couples of two cylinders each provided with a scraping comb and  
placed in such a way that the shavings arising from the two coupled cylinders  
15 are intermixed and intermingled for crushing by the next crushing cylinders  
and so on up to the last. The number of alternate crushings and mixings may  
evidently be made to conform to the nature of the substance to be treated, in  
order not to overweight the machine with useless couples as soon as absolute  
homogeneousness is obtained, so that for certain substances two couples will  
20 perfectly suffice whilst others require three.

For toilet soap, more particularly, four couples produce absolute homogeneousness  
of the paste and a mixture of colour, and therefore a machine with four couples  
of rollers will now be more particularly described.

The constructive characteristic of the machine consists in the arrangement of  
25 various couples of cylinders on an inclined plane, thus ensuring the automatic feed  
of each successive couple by the preceding couple arranged on a higher level, the  
feed being commenced at the highest pair of cylinders so as to avoid any waste  
of the material which would take place with a feed from the bottom.

Two standards or lateral frames are firmly connected with one another by  
30 means of cross bars, said standards or frames having upper surfaces inclined to suit  
the arrangement of the successive couples of crushing cylinders which have their  
trunnions in slide bearings adjustable in suitable slides in the said frames or  
upper surfaces by means of screws with adjustable nuts for each of the couples.  
Each of the cylinders of each couple is individually provided with a scraper, and  
35 the scrapers of the lower set of cylinders are fixed on bars of square section pivoting  
in the frames and capable thus of being placed in such a way as to form a bridge  
between two consecutive cylinders to transfer the shavings released from a previous  
cylinder to the next.

[Price 8d.]



*Improvements in Crushing or Kneading and Mixing Apparatus for Soap, &c.*

The scrapers are solid combs or scrapers having for their object to radically clean each of the lower cylinders in such a way as to return into the operation the slightest particle of material and thus to prevent any possibility of waste.

The bottom of the feed box is mounted in the same manner in order to allow of its being adapted to any desirable position and is adjustable by means of a screw. 5  
The scrapers of the upper row of cylinders are each fixed against the upper ends of two arms pivoting also on the frame in such a way as to place themselves naturally vertically against the cylinders and thus direct downwards the shaving released. The said upper scrapers are toothed combs and have the teeth arranged differently, so as to alternately produce wide and narrow shavings and thick and 10 thin shavings with a view to rendering the mixing perfect. The last or lowest of the lower scrapers is placed vertically and directs the shavings on to a travelling band which conveys them to the final operation.

With the object of obtaining a perfect action the cylinders are arranged for different speeds, that is to say, the second couple revolve more rapidly than the 15 first couple and the fourth couple more rapidly than the third couple. Moreover all the cylinders of the upper row revolve more rapidly than the cylinders of the lower row, thus improving the crushing or kneading and becoming more heavily charged with material than the lower ones. Of course these speeds are optional and may be varied at will according to requirements. They are transmitted to the 20 cylinders in the ordinary manner by means of a series of gearing and intermediate gearing at the ends of the shafts or trunnions of the cylinders, all being operated by a fixed pulley and the fly wheel keyed on a driving shaft bearing in a standard at the one end and in the frame at the other. This driving gearing also actuates narrower or lighter gear wheels and intermediate gearings which operate the 25 travelling band.

The working of the crushing or kneading and mixing apparatus will be easily understood from the preceding. Soap sprinkled with colour is introduced into the feed box in front of the first and highest couple of cylinders for the first crushing and is gradually removed from the said cylinders by the upper and lower scrapers. 30 The shaving rises in a crest in front of the latter and bends over falling down pell mell in such a way as to mix most intimately the material and the colour by the multiple change of position of the shavings carried away with the part disengaged from the lower cylinder towards the second couple of cylinders where the same action is repeated in order to produce a more perfect mixing and so on in succession 35 for each couple until absolute homogeneousness is obtained at the last couple which deliver the soap to the travelling band which conveys it to the ultimate operations.

Dated this 1st day of March 1898.

WM. P. THOMPSON & Co., 40  
Of 6, Lord Street, Liverpool, Agents.

## COMPLETE SPECIFICATION.

**Improvements in Crushing or Kneading and Mixing Apparatus  
for Soap and other like Material.**

A communication by ANATOLE DES CRESSONNIÈRES and ERNEST DES CRESSONNIÈRES, 45  
both of 82, Chaussée de Gand, Brussels, in the Kingdom of Belgium, Soap  
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I, WILLIAM PHILLIPS THOMPSON, F.C.S., M.I.M.E., of the Agency for Foreign  
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*Improvements in Crushing or Kneading and Mixing Apparatus for Soap, &c.*

in the County of Lancaster, 118, New Street, Birmingham, in the County of Warwick, and 322, High Holborn, in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The crushing or kneading and mixing apparatus which forms the object of the present invention is designed to subject the soap to an alternate crushing and mixing treatment in shavings instead of subjecting it to simple crushing by means of three cylinders, thus enabling an absolute homogeneousness of the paste to be obtained as regards its composition, and allowing of its being mixed with colour, whilst preventing waste of soap.

The alternate action of crushing and mixing is obtained by the arrangement of crushers in couples of two cylinders each provided with a scraping comb and placed in such a way that the flakes, chips or shavings arising from the two coupled cylinders are intermixed and intermingled for crushing by the next crushing cylinders and so on up to the last. The number of alternate crushings and mixings may evidently be made to conform to the nature of the substance to be treated, in order not to overweight the machine with useless couples as soon as absolute homogeneousness is obtained, so that for certain substances two couples will perfectly suffice whilst others require three.

For toilet soap, more particularly, four couples produce absolute homogeneousness of the paste and a mixture of colour, and therefore a machine with four couples of rollers will now be more particularly described, reference being had to the accompanying drawings, in which,

Figure 1 is a longitudinal section of the crushing or kneading and mixing apparatus; and

Figure 2, a front view.

The constructive characteristic of the machine consists in the arrangement of various couples of cylinders on an inclined plane, thus ensuring the automatic feed of each successive couple by the preceding couple arranged on a higher level, the feed being commenced at the highest pair of cylinders so as to avoid any waste of the material which would take place with a feed from the bottom.

B are two standards or lateral frames firmly connected with one another by means of cross bars E and having upper surfaces inclined to suit the arrangement of the successive couples of crushing cylinders which have their trunnions in slide bearings adjustable in suitable slides C in the said frames or upper surfaces by means of screws V with adjustable nuts for each of the couples  $W^1 R^1$ ,  $W^2 R^2$ ,  $W^3 R^3$ ,  $W^4 R^4$  in which  $W^1$ — $W^4$  are the crushers of the lower row and  $R^1$ — $R^4$  the crushers of the upper row of each couple. Each of the cylinders of each couple is individually provided with a scraper, and the scrapers  $O^1 O^2 O^3 O^4$  of the lower set of cylinders are fixed on bars D of square section pivoting in the frames B and capable thus of being placed in such a way as to form a bridge between two consecutive cylinders to transfer the shavings released from a previous cylinder to the next.

The scrapers  $O^1 O^2 O^3 O^4$  are scrapers having for their object to radically clean each of the lower cylinders in such a way as to return into the operation the slightest particle of material and thus to prevent any possibility of waste.

The bottom  $O^0$  of the feed box is mounted in the same manner in order to allow of its being adapted to any desirable position and is adjustable by means of a screw  $V^1$ . The scrapers  $P^1$ — $P^4$  of the upper row of cylinders are each fixed against the upper ends of two arms F pivoting also on the frame B in such a way as to place themselves naturally vertically against the cylinders and thus direct downwards the shaving released. The scrapers  $P^1$ — $P^4$  are toothed combs and have the teeth arranged differently, so as to alternately produce wide and narrow shavings and thick and thin shavings with a view to rendering the mixing perfect. The last ( $O^4$ ) of the lower set of scrapers is placed vertically and directs the shavings on to a travelling band T which conveys them to the final operation.



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With the object of obtaining a perfect action the cylinders are arranged for different speeds, that is to say, the couple  $W^2 R^2$  revolve more rapidly than the couple  $W^1 R^1$  and the couple  $W^4 R^4$  more rapidly than the couple  $W^3 R^3$ . Moreover all the cylinders of the upper row revolve more rapidly than the cylinders of the lower row, thus improving the crushing or kneading and becoming more heavily charged with material than the lower ones. Of course these speeds are optional and may be varied at will according to requirements. They are transmitted to the cylinders in the ordinary manner by means of a series of gearing and intermediate gearing H and I at the ends of the shafts or trunnions of the cylinders, all being operated by a fixed pulley N and the flywheel M keyed on a driving shaft A bearing in a standard K at the one end and in the frame B at the other. This driving gearing also actuates narrower or lighter gear wheels and intermediate gearings L which operate the travelling band T.

The working of the crushing or kneading and mixing apparatus will be easily understood from the preceding. Soap sprinkled with colour is introduced into the feed box in front of the first and highest couple of cylinders for the first crushing and is gradually removed from the said cylinders  $W^1$  and  $R^1$  by the scrapers  $O^1$  and  $P^1$ . The shaving rises in a crest in front of the latter and bends over falling down pell mell in such a way as to mix most intimately the material and the colour by the multiple change of position of the shavings carried away with the part disengaged from the lower cylinder towards the second couple of cylinders where the same action is repeated in order to produce a more perfect mixing and so on in succession for each couple until absolute homogeneousness is obtained at the last couple which deliver the soap to the travelling band T which conveys it to the ultimate operations.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me by my foreign correspondents, I declare that what I claim is:—

A crushing or kneading and mixing apparatus for soap and like materials, consisting of a series of crushers arranged on an inclined plane and formed of successive couples or pairs of cylinders provided with scrapers, said scrapers being adapted and arranged to automatically transfer from one couple of cylinders to the next lower couple the mixture of shavings which are intermingled as they are disengaged and which vary in size at each couple, substantially as and for the purpose hereinbefore set forth.

Dated this 25th day of November 1898.

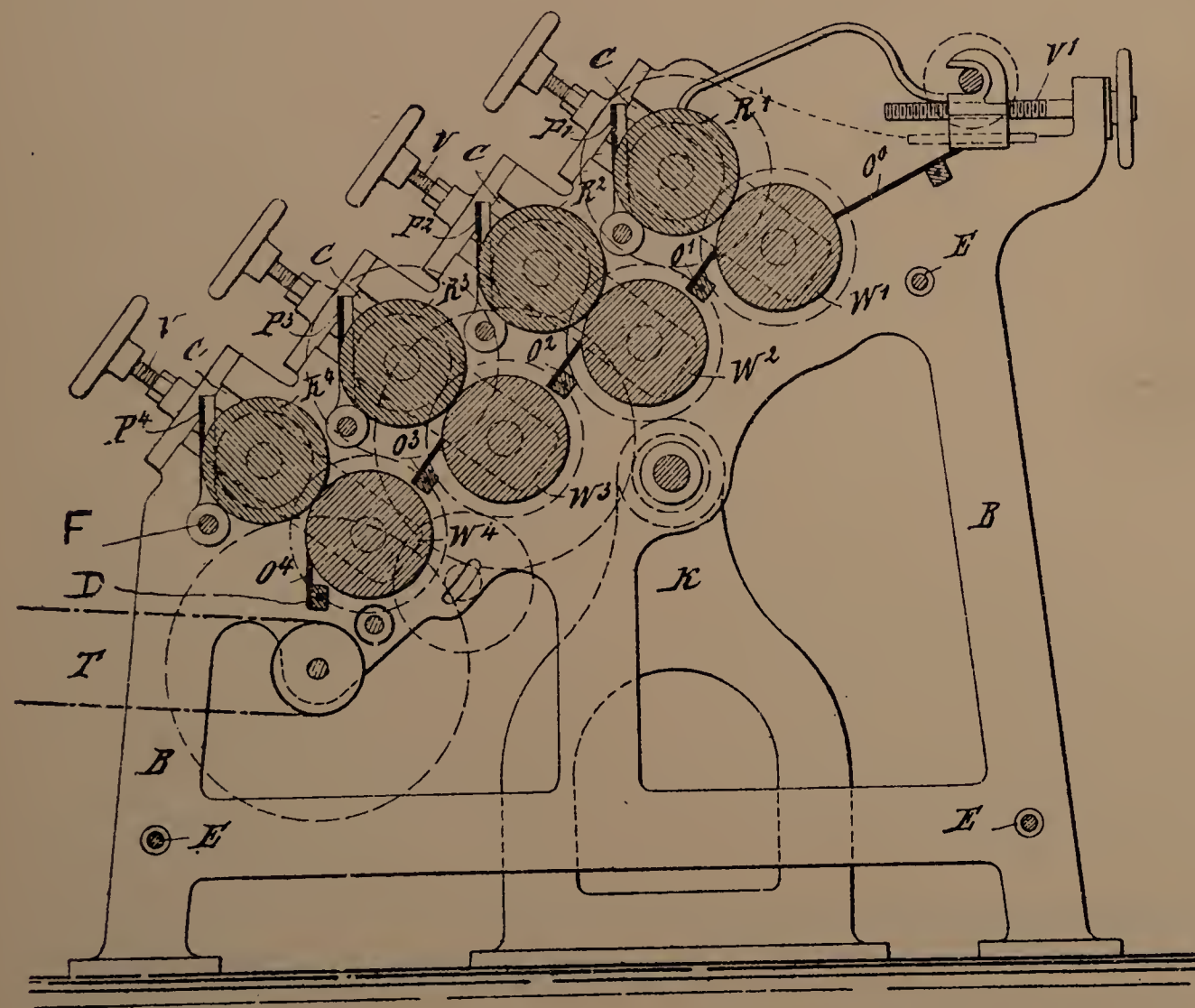
WM. P. THOMPSON & Co.,  
Agents.

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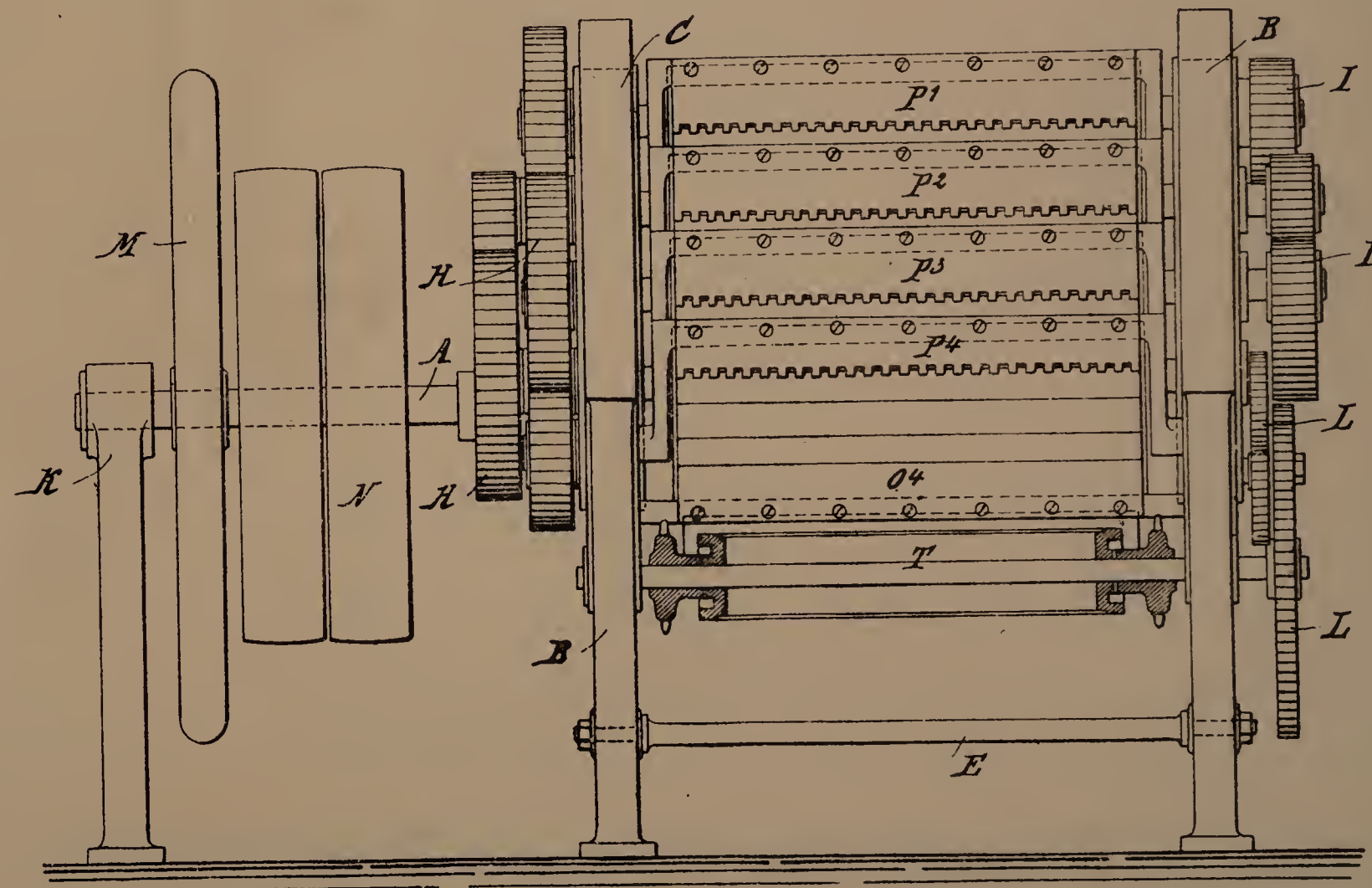




*Fig. 1.*



*Fig. 2.*



[This Drawing is a reproduction of the Original on a reduced scale]

